SUPERFUND RESPONSE ACTION PRIORITY PANEL REVIEW FORM					
Date Form Completed:	January 17, 2014				
General Site Information					
Region:	2	City:	Wall Township	State:	New Jersey
CERCLIS EPA ID:	NJSFN0204241		CERCLIS Site Name:	White Swan Cleaners/Sun Cleaners Area Groundwater Contamination Superfund Site	
NPL Status: (P/F/D)	Final		Year Listed to NPL:	2004	

Brief Site Description: *(Site Type, Current and Future Land Use, General Site Contaminant and Media Info, Site Area and Location information.)*

The White Swan Cleaners/Sun Cleaners Area Groundwater Contamination Site is an area of soil and groundwater contaminated with dry cleaning chemicals and/or their breakdown products in portions of three municipalities: Wall Township, Manasquan Borough and Sea Girt Borough, New Jersey.

The shallow, unconfined Cohansey and Kirkwood aquifers have been contaminated by chemicals released at two former dry cleaning facilities located approximately 0.2 miles apart along Highway 35. The two dry cleaners released the same volatile organic contaminant, tetrachloroethylene (PCE) onto the soil, where it migrated into the shallow permeable sandy aquifer. The former dry cleaners were named White Swan Cleaners and Sun Cleaners. The location of the former White Swan Cleaners is 1322 Sea Girt Avenue and the location of the former Sun Cleaners is 2213 Route 35, (aka 201 Manasquan Circle), both in Wall Township.

Both dry cleaners operated from approximately 1960 through 1991. PCE was released to soils at both properties during the period of dry cleaning operations. The former Sun Cleaners building on the west side of Manasquan Circle was demolished. The property is currently a vacant lot. The former White Swan building was used as a bank branch office and is currently vacant. Contaminated soils containing elevated levels of PCE and related breakdown products remain at both facilities. Approximately 4,360 pounds of PCE are estimated to remain in soils at the White Swan source area. Approximately 140 pounds of PCE are estimated to remain in soils at the Sun Cleaners source area.

The groundwater contaminant plume extends from the two former dry cleaners' properties to the east and discharges to local surface water bodies and the Atlantic Ocean. The groundwater contaminant plume at the Site is approximately one mile wide and two miles long. The plume is bordered by Highway 35 on the west, Hannabrand Brook on the north, Judas Creek on the south and the Atlantic Ocean on the east. Regional groundwater flow is from Highway 35, east to the ocean. There is mixed residential and commercial development along Highway 35 including strip malls, stores, a car dealership and gas stations. Most of the area between Highway 35 and the ocean is composed of densely packed single family residential homes with some small commercial buildings and two garden centers with greenhouses. Close to the ocean there are two tidal lakes, Wreck Pond on the north and Stockton Lake on the south. Adjacent to Stockton Lake, overlying the southeastern portion of the plume, is a National Guard training base.

The top of the water table is approximately twelve feet below the ground surface and the groundwater contamination extends in groundwater to a depth of approximately 70 feet. Indoor air contamination in homes and businesses is present downgradient of the source areas. To date, approximately 450 of 1,200 homes and commercial buildings overlying the plume have had their subslab and/or indoor air sampled. Thirty-four buildings and homes out of the 450 have had high enough PCE vapor levels to require indoor air ventilation systems. Sampling of indoor air is ongoing.

The site's historical usage has been mixed residential and commercial with a large influx of visitors during the summer months. Based upon discussions with local officials, it is anticipated that the land use in the future will stay the same. Currently, there are approximately 4,000 residents living within the boundaries of the Site's large groundwater contaminant plume.

General Project Information

Type of Action:	Remedial	Site Charging SSID:	02BX
Operable Unit:	OU 1	CERCLIS Action RAT Code:	

Is this the final action for the site that will result in a site construction completion?	☐ Yes	☒ No
Will implementation of this action result in the Environmental Indicator for Human Exposure being brought under control?	☐ Yes	☒ No

Response Action Summary

Describe briefly site activities conducted in the past or currently underway:

In 2000, The New Jersey Department of Environmental Protection (NJDEP) collected soil and groundwater samples from the Sun Cleaners property and the White Swan property which revealed the presence of PCE. These data confirmed the Sun Cleaners and the White Swan properties as sources of groundwater contamination. NJDEP collected indoor air samples from approximately 30 locations and found PCE present in some of samples. As a result, NJDEP requested EPA's assistance to evaluate the PCE contamination. EPA began an investigation of indoor air in late 2001 which included approximately 300 samples from 220 locations. The sampling included homes, schools and businesses. As a result, indoor air ventilations systems were installed in 6 residences and 2 commercial properties. Additionally, NJDEP continued to sample and install ventilation systems in structures with PCE above health based levels in indoor air. To date, a total of 34 buildings received ventilation systems. Indoor air sampling continued while the remedial investigation was being conducted and is ongoing. EPA and NJDEP conducted preliminary assessments and site investigations through 2003. The site was included on the National Priorities List (NPL) on September 23, 2004.

On September 21, 2006, EPA issued Bank of America (BOA), a potentially responsible party (PRP) for the Site, an administrative order on consent which required BOA to conduct a remedial investigation and feasibility study (RI/FS). The remedial investigation field activities began in August 2007. After extensive preliminary field screening investigations, BOA installed over 60 monitoring wells and piezometers. BOA collected over 500 groundwater samples using temporary borings. Soil and groundwater samples were collected and analyzed through 2008, 2009 and 2010. Most of the RI field work was completed by 2010. Concurrent with this work, EPA performed extensive vapor investigations in and under structures in proximity to the groundwater contaminant plume. The RI and FS reports were finalized in 2013.

In September 2013, EPA selected a remedy which included the excavation and disposal of the White Swan property source area soils, in-situ vapor extraction and air sparging of the Sun Cleaners source area soils, a groundwater pump and treat system to address the most highly contaminated Site groundwater contamination, and Monitored Natural Attenuation of lesser contaminated groundwater.

Specifically identify the discrete activities and site areas to be considered by this panel evaluation:

The planned remedial action to be considered by the panel includes the construction of an in-situ Soil Vapor Extraction (SVE)/Air Sparging (AS) system at the Sun Cleaners source area. Soils on the Sun Cleaners source area are considered to be principal threat wastes. In addition to SVE treatment of soils, the action will include air sparging of highly contaminated shallow groundwater located in close proximity to the contaminated soils. Levels of PCE in shallow groundwater underlying the Sun Cleaners source area are as high as 61,000 ppb.

The remedial design of this system is expected to include: construction of a free-standing building which will include compressors, pumps, piping, tanks, controllers for the air sparging and soil vapor extraction treatment system which may include a catalytic oxidizer system or granular activated carbon system to treat the extracted vapors. In addition, a number of groundwater/vapor recovery wells will be installed on the property along with vacuum extraction piping system, air sparging lines, pumps and controllers. Eight to ten monitoring wells, piezometers, and vapor probes are expected to be required. The system is expected to operate for 10 years.

Briefly describe additional work remaining at the site for construction completion after completion of discrete activities being ranked:

The planned remedial actions to be considered by the panel include the construction of the selected in-situ SVE/AS system to remediate saturated and unsaturated soils at the Sun Cleaners source area portion of the Site. Concurrently, EPA plans to oversee a PRP's remediation of the White Swan source area and the performance of the groundwater portion of the selected remedy as per the ROD. The design of the selected remedy for the White Swan source area soils will commence in 2014. The selected groundwater extraction and treatment system is likely to be the last portion of the remedy constructed. A schedule for this portion of the remedy will be developed pending completion of enforcement negotiations.

Response Action Cost

Total Cost of Proposed Response Action:

($ amount should represent total funding need for new RA funding from national allowance above and beyond those funds anticipated to be utilized through special accounts or State Superfund Contracts.)

The estimated capital cost of the portion of the remedy to be considered by the panel evaluation is $2,500,000. The estimated annual operation cost is $250,000 for approximately 10 years.

Source of Proposed Response Action Cost Amount:

(ROD, 30%, 60%, 90% RD, Contract Bid, USACE estimate, etc…)

The source of the cost information is the ROD and the supporting FS report, adjusted to account for Army Corp of Engineers oversight costs.

Breakout of Total Action Cost Planned Annual Need by Fiscal Year:

(If the estimated cost of the response action exceeds $10 million, please provide multiple funding scenarios for fiscal year needs; general planned annual need scenario, maximum funding scenario, and minimum funding scenario.)

FY14: $2,500,000

FY15 – FY25: $250,000 per year

Other information or assumptions associated with cost estimates?
N/A

Readiness Criteria
1. Date State Superfund Contract or State Cooperative Agreement will be signed (Month)?
A Superfund State Contract (SSC) covering the subject work will be executed in June 2014.
2. If Non-Time Critical, is State cost sharing (provide details)?
Yes
3. If Remedial Action, when will Remedial Design be 95% complete?
September 2014
4. When will Region be able to obligate money to the site?
September 2014
5. Estimate when on-site construction activities will begin:
November 2014
6. Has CERCLIS been updated to consistently reflect project cost/readiness information?
N/A. CERCLIS has recently been replaced with a new tracking system, SEMS. All information will be input into the new system shortly.

Site/Project Name:	White Swan Cleaners/Sun Cleaners Area Groundwater Contamination Site

Criteria #1 - RISKS TO HUMAN POPULATION EXPOSED (Weight Factor = 5)
Describe the exposure scenario(s) driving the risk and remedy. Include risk and exposure information on current/future use, on-site/off-site, media, exposure route, and receptors:
The current land use in the vicinity of the Site is primarily residential and commercial, and the area is densely developed. Future land use is expected to be the same as the current land use. The potential exposure to groundwater which contains PCE and other VOCs presents the greatest risk to potential receptor populations that may use the contaminated groundwater beneath the Site. EPA's risk assessment indicates that the non-cancer hazard Index (HI) due to potential exposure to VOCs in Site groundwater is 30 for the adult resident and 87 for the child resident. The cancer risks and hazard indices for future use of the groundwater for drinking exceed the acceptable EPA risk ranges and hazard value for both the adult and the child ($4x10^{-2}$ for the adult and $7x10^{-2}$ for the child). The contaminants of concern at the Site include PCE, TCE, and cis-1,2-Dichloroethene and vinyl chloride. The soil remediation being considered by the panel has been classified as a principal threat waste. While direct contact risks for exposure to this soil are within acceptable levels, the risks that drive the soil remedy for

the Sun Cleaners source area are related to the risks that soils pose to groundwater in the aquifer underlying the Site. This soil contamination has and continues to migrate to groundwater, where the VOCs dissolve into groundwater and migrate eastward, forming a large groundwater plume that underlies a highly developed residential and commercial area covering approximately two square miles. The impacted groundwater is classified as a drinking water aquifer by the State of New Jersey, however, it is not currently used for that purpose. VOC contamination in the groundwater, which originated in soils at the two source areas, has and continues to volatilize and accumulate below building slabs and has entered the indoor air space of numerous buildings located over the plume, posing elevated risks to some residents.

The aquifer underlying the Site is classified by the state of New Jersey as a Class II-A potable aquifer. PCE is the primary contaminant of concern, and has been detected at levels of up to 75,000 parts per billion (ppb) at the Site. The state of New Jersey drinking water standard for PCE, which is the selected cleanup level, is 1 ppb. The highest groundwater contaminant level detected underlying the Sun Cleaners source area is 61,000 ppb. That is 61,000 times greater than the drinking water cleanup level established by the Site. EPA has determined based on site-specific modeling, that in order to protect groundwater at the Site, unsaturated soils at the two source areas must be remediated to a level of 1 part per million (ppm). The highest level of PCE in the unsaturated soils at the Sun Cleaners Source area is 51 ppm.

Furthermore, VOCs vapors have migrated into existing on-site buildings from groundwater, and threaten the 1,200 structures located over the plume. Based on risks posed by indoor air contamination, EPA proceeded in 2001 to evaluate and address indoor air contamination. To date, subslab and or indoor air samples have been collected from approximately 450 buildings (mostly residences) within the area of the Site's large groundwater plume. Levels of PCE in indoor air have been detected as high as 224 $\mu g/m^3$. For comparison, levels of PCE I indoor air of 9.4 $\mu g/m^3$ represent a cancer risk of $1x10^{-6}$. Based on the results of this sampling, to date, remediation systems have been installed in 34 residences to eliminate levels of PCE in indoor air above levels posing an unacceptable risk.

Site contamination continues to migrate uncontrolled from soil to groundwater and continues to impact and threaten drinking water supplies and indoor air quality throughout this densely populated area. There are over 1,200 buildings (mostly residential) overlying the large groundwater contaminant plume. Removal of contaminants from the soils at the Sun Cleaners source area will eliminate one of two identified source areas for PCE contamination at the Site, allowing the groundwater portion of the remedy (to be implemented in a future action) to be more efficiently implemented.

Estimate the number of people reasonably anticipated to be exposed in the absence of any future EPA action for each medium for the following time frames:

MEDIUM	<2yrs	<10yrs	>10yrs
Soil	25	25	25
Groundwater	4,000	4,000	4,000
Vapor	4,000	4,000	4,000

Discuss the likelihood that the above exposures will occur:

Other Risk/Exposure Information?

N/A

Site/Project Name:	White Swan Cleaners/Sun Cleaners Area Groundwater Contamination Site

Criteria #2 – SITE/CONTAMINANT STABILITY (Weight Factor = 5)

Describe the means/likelihood that contamination could impact other areas/media given current containment:

A primary concern at the Site is that highly elevated levels of VOCs in soil and shallow groundwater in the Sun Cleaners source area continues to migrate uncontrolled from soil to groundwater, and then once in groundwater, to downgradient portions of the plume. Contaminated groundwater has migrated uncontrolled and formed a two square mile plume underlying a high developed residential area where current contaminant exposures from this plume include indoor air and use of irrigation water. Highly elevated levels of VOCs remaining in Sun Cleaners source area soils and shallow groundwater are not contained in any way, are highly soluble, and continue to migrate to groundwater, and from groundwater, to indoor air. The areas of the plume in close proximity and downgradient of the two source areas that contain the highest levels of groundwater contamination are referred to as the Near Field areas, and generally contain concentrations of PCE over 1,000 ppb. The Near Field areas include groundwater underlying the Sun Cleaners property and extending over 1,000 feet downgradient.

The plume is bounded by and discharges to several surface water bodies. While surface water in these bodies does not exhibit elevated levels of PCE, sediment has been impacted at levels of concern in Hannabrand Brook (HIs greater than 1) and will be monitored over time. There is the potential for the impact to sediment to increase over time.

Are the contaminants contained in engineered structure(s) that currently prevents migration of contaminants? Is this structure sound and likely to maintain its integrity?

No, the contaminants are not contained in any engineered structure, and migration of VOC from soils to groundwater at the Sun Chemical source area is ongoing and remains uncontrolled.

Are the contaminants in a physical form that limits the potential to migrate from the site? Is this physical condition reversible or permanent?

No, the contaminants currently present in the Sun Cleaners source area are VOCs, and are highly soluble in water. Due to this, VOCs are continuing to migrate to the underlying groundwater aquifer. Once in the groundwater, site contaminants continue to migrate easily in the sandy regional aquifer to form a very large (two square mile) contaminant plume.

Are there institutional physical controls that currently prevent exposure to contamination? How reliable is it estimated to be?

No institutional controls are in place to prevent exposure to site contamination.

Other information on site/contaminant stability?

N/A

Site/Project Name:	White Swan Cleaners/Sun Cleaners Area Groundwater Contamination Site

Criteria #3 – CONTAMINANT CHARACTERISTICS (Weight Factor = 3)

(Concentration, toxicity, and volume or area contaminated above health based levels)

List Principle Contaminants (Please provide average and high concentrations.):

(Provide upper end concentration (e.g., 95% upper confidence level for the mean, as is used in a risk assessment, or maximum value [assuming it is not a true outlier], along with a measure of how values are distributed {e.g., standard deviation} or a central tendency values [e.g., average].)

Contaminant	***Media**	****Concentrations**
Tetrachloroethene	SL	Levels up to 51 ppm at the Sun Cleaners source area
Trichloroethene	SL	Levels up to 3.8 ppm at the Sun Cleaners source area
Cis-1,2-Dichloroethene	SL	Levels up to 31 ppm at the Sun Cleaners source area
Tetrachloroethene	GW	Levels up to 61,000 ppb at Sun Cleaners source area
Trichloroethene	GW	Levels up to 1,200 ppb at Sun Cleaners source area
Cis-1,2-Dichloroethene	GW	Levels up to 2,100 ppb at Sun Cleaners source area

*(*Media: AR – Air, SL – Soil, ST – Sediment, GW – Groundwater, SW – Surface Water)*

*(**Concentrations: Provide concentration measure used in the risk assessment and Record of Decision as the basis for the remedy.)*

Describe the characteristics of the contaminant with regard to its inherent toxicity and the significance of the concentrations and amount of the contaminant to site risk. *(Please include the cleanup level of the contaminants discussed.)*

Cancer Risk Drivers

The major cancer risk drivers identified in the human health risk assessment were Tetrachloroethylene (PCE), Dichloroethylene (TCE), and cis-1,2-dichloroethylene (cis-1,2-DCE). PCE is the most prevalent of these compounds in both soil, groundwater and indoor air. At the Sun Cleaners source area, PCE has been detected at levels of to 51 ppm in soils and 61,000 ppb in shallow groundwater. It has been classified as a likely human carcinogen and is associated with elevated risks of certain types of cancer (including bladder, non-Hodgkin lymphoma, and multiple myeloma-- a cancer of the blood).

Noncancer Risk Drivers

The major noncancer risk driving chemicals identified in the risk assessment were PCE and TCE. Exposure to these chemicals can have a negative impact on the human nervous system, the reproduction and development system, and to the kidney, liver, immune and hematologic systems.

Describe any additional information on contaminant concentrations that could provide a better context for the

distribution, amount, and/or extent of site contamination. *(e.g. frequency of detection/outlier concentrations, exposure point concentrations, maximum or average concentration values, etc.)*

SOIL CONTAMINATION - Sun Cleaners Soils

At the Sun Cleaners, a total of 48 subsurface soil samples from 13 soil borings were collected during the remedial investigation. PCE contamination in the unsaturated zone soils at the Sun Cleaners property was found to be as high as 51 ppm (at a depth of 6 to 13 feet bgs) with a total PCE soil mass of approximately 140 pounds. The maximum TCE level was 3.8 ppm and the maximum cis-1,2, DCE level was 31 ppm.

Shallow groundwater directly below the Sun Cleaners source area will be addressed in this remedy through air sparging, and them SVE. The levels of PCE in the shallow groundwater are extremely high, up to 61,000 ppb.

The groundwater investigation included a Dense Non Aqueous Phase Liquids (DNAPL) Source Assessment. A DNAPL source may be present if the ground water concentrations of a contaminant exceed 1% of its solubility. In the case of PCE, 1% of its solubility (206,000 ppb) is 2,060 ppb. The Sun Cleaners had PCE levels up to 61,000 ppb. However, DNAPL was not observed in any of the groundwater samples or soil borings. The same is true for TCE and DCE; while the concentrations in groundwater were well over 1% of their solubilities, no DNAPL was observed during the RI. If DNAPL is discovered at the Site during RD or RA, it will be addressed.

Other information on contaminant characteristics?

N/A

Site/Project Name:	White Swan Cleaners/Sun Cleaners Area Groundwater Contamination Site

Criteria #4 – THREAT TO SIGNIFICANT ENVIRONMENT (Weight Factor = 3)

(Endangered species or their critical habitats, sensitive environmental areas.)

Describe any observed or predicted adverse impacts on ecological receptors including their ecological significance, the likelihood of impacts occurring, and the estimated size of impacted area:

A screening-level ecological risk assessment (SLERA) was conducted to evaluate the potential for ecological risks from Site-related contaminants to aquatic environments within the Site. The SLERA focused on evaluating the potential for impacts to sensitive ecological receptors to site-related contaminants through exposure to surface water and sediment in the Hannabrand Brook system (which includes Wreck Pond), and the Judas Creek system (which includes Mac Pond and Stockton Lake). These water bodies (along with the Atlantic Ocean) bound the Site and receive discharge from the Site's contaminated groundwater plume.

Surface water and sediment concentrations were compared to ecological screening values as an indicator of the potential for adverse effects to ecological receptors for each water body system.

Hannabrand Brook System: There is a potential for adverse effects to fish and aquatic invertebrates from exposure to Site-contaminated groundwater that is discharging to Hannabrand Brook. The sediment screening criteria were exceeded for PCE in three locations, resulting in hazard indices (HIs) of 4.1, 1.8 and 0.7, two of which are above the acceptable value of 1. The PCE detections in the sediment are considered to be site-related.

Judas Creek System: There is a potential for adverse effects to aquatic fish and invertebrates from exposure to contaminated groundwater that may be discharging to Judas Creek. The sediment screening criteria were exceeded for PCE in two locations, resulting in HIs of 4.4 and 1.8, which are above the acceptable value of 1. The PCE detections in the sediment may be associated with runoff from an industrial area instead of groundwater discharge.

Based on the results of the ecological risk assessment, EPA has determined that a remedial action is necessary to protect the environment from actual or threatened releases of hazardous substances, which includes the discharge of contaminated groundwater into surface water bodies at the Site.

Would natural recovery occur if no action was taken? ☐ Yes ☒ No
If yes, estimate how long this would take.

Natural recovery would not be expected to occur in a reasonable timeframe. It is estimated that it would take over 400 years for soil and groundwater to reach protective levels. The soil and associated shallow groundwater contamination at the Sun Cleaners source area has persisted for approximately 25-50 years and would persist for hundreds of years, unless action is taken. The contaminated soils will continue to act as a source of groundwater contamination, which will migrate uncontrolled throughout the area of the plume. This contamination will continue to volatilize and present exposure risks to people living above the plume, as well as receptors in the Site's surface water bodies for hundreds of years.

Other information on threat to significant environment?

N/A

Site/Project Name:	White Swan Cleaners/Sun Cleaners Area Groundwater Contamination Site

Criteria #5 – PROGRAMMATIC CONSIDERATIONS (Weight Factor = 4)

(Innovative technologies, state/community acceptance, environmental justice, redevelopment, construction completion, economic redevelopment.)

Describe the degree to which the community accepts the response action.

The community and its elected officials are extremely interested in the progress of Site remediation and are highly involved and supportive of immediate action to address Site contamination.

The public meeting for the Site was held in August 2013 and was very well attended by local residents and elected officials from all three towns where the Site is located. For the Sun Cleaners portion of the remedy, the community expressed a preference for unsaturated zone soils to be excavated, treated and disposed of off-site, similar to the selected remedy for the White Swan source area portion of the Site. The communities' primary concern is that action to address contamination be implemented as quickly as possible.

In addition, the community is very concerned about indoor air quality and numerous residents contact EPA on a regular basis to communicate requests for sampling and remediation systems. The two plant nursery businesses in the area are concerned about indoor air issues and water quality issues because they are using contaminated groundwater to water their stock.

Describe the degree to which the State accepts the response action.

The State of New Jersey agrees with the selected response action and will provide the necessary matching funds to implement the action.

Describe other programmatic considerations, e.g.; natural resource damage claim pending, Brownfields site, use of innovative technology, construction completion, economic redevelopment, environmental justice, etc...

It is anticipated that the ongoing remedial design will be completed in 2014. It is estimated that the remedy would take approximately 6 months to construct and would operate for approximately 10 years. Therefore, if funding is provided, it is expected that construction can be completed very quickly, in fiscal year 2015.

As is the case with many Sites, cleanup of the former Sun Cleaners property will enable redevelopment and a return of the property to productive use.